Docket No. 12969-1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Bitler
Serial No.: 09/810,920
Filing Date: 03/16/2001
Title: Polymeric Thickeners for Oil-Containing Compositions

Group Art Unit: 1714
Examiner: Szekely, P.

Assistant Commissioner for Patents
Washington, DC 20231

DECLARATION

I, Steven P. Bitler, declare as follows.

1. I hold the degrees of Bachelor of Science (Chemistry, Boston College, 1979) and Doctor of Philosophy (Chemistry, University of Southern California, 1984). I am Vice President of Corporate Technology at Landec Corp., the assignee of the present application, where I have been employed since 1988. I am a coinventor of the invention described in the above-identified application, which I shall refer to in this declaration as "the present invention" and "the present application" respectively.

I have carried out doctoral and post-doctoral research in particular fields of polymer technology, and I am familiar with polymer technology in general. During my 15 years at Landec, I have carried out and directed numerous studies in the technology of side chain crystalline (SCC) polymers, and I am a coinventor of numerous United States and foreign patents concerned with the technology of SCC polymers, including U.S. Patent Nos. 5,412,035, 5,665,822, 5,752,926, 5,807,291, 6,199,318, 6,255,367, 6,492,462 and 6,540,984. For the last six years, those studies have included the use of SCC polymers for thickening oil-containing compositions, in particular cosmetic compositions, as disclosed in the present application and the copending related

application Serial No. 09/398,377 (of which I am the inventor) and in continuing work for the commercial application of the inventions disclosed in the present application and in Serial No. 09/398,377.

2. The present application relates to the use of certain side chain crystalline (SCC) polymers to thicken oil-containing compositions, particularly for use in the cosmetic industry. The SCC polymer is dissolved in the oil at a temperature above the melting point of the polymer; when the composition is cooled, crystallization of the polymer results in the thickening of the oil. Given the information disclosed in the present application, it is a straightforward matter to determine how much of a particular SCC polymer (or mixture of SCC polymers) is needed in order to produce the desired thickening of a particular oil-containing composition.

3. I have carefully reviewed U.S. Patent No. 5,281,329, which I shall refer to in this declaration as Mueller, and U.S. Patent No. 5,736,125, which I shall refer to in this declaration as Morawsky. I am also familiar with all the other documents that have been generated in the prosecution of the present application and the related Serial No. 09/398,377.

4. The claims rejected under 35 USC 102 and 103 are directed to cosmetic compositions in which a particular SCC polymer is used to thicken an oil. The rejections are based on Mueller in combination with Morawsky. However, as will be clear from the detailed comments below, Mueller is not concerned with cosmetic compositions, or with the thickening of oils.

5. Mueller is concerned with improving the flow characteristics of petroleum oil products containing paraffins which dissolve in the oil at higher temperatures, but crystallize out on cooling, so that "the ability of the oils to flow is lowered or entirely prevented" (column 1,lines 14-19). Mueller provides an "outstanding flow improving effect "(column 4, line 35) by dissolving into the paraffin-containing petroleum oil an additive which is a mixture of certain SCC polymers; Mueller's SCC polymers do not

contain carboxyl (or other functional) groups. The quantity of Mueller's carboxyl-free SCC polymer additive is (column 4, lines 12-15).

1-10,000 ppm (0.0001-1%), *preferably 50 to 2000 ppm* (0.005-0.2%) *depending on their* (the petroleum oils') *origin.*

[All percentages of additive given in this declaration are by weight based on weight of the oil.] The amounts of additive used in the specific Examples are 4-1,000 ppm (0.0004-0.1%), and their efficacy is measured by the extent to which they depress the pour point of the oil, i.e. the temperature below which it is impossible to pour the oil.

6. When Mueller refers to the "outstanding flow improving effect" provided by his invention, he clearly means that his additives, when used in accordance with his instructions, will make the petroleum oils flow more easily, i.e. will make them thinner. For example, a paraffin-containing petroleum oil which has a pour point having a first value (for example 30°C, as in Mueller's Example 8), cannot be poured at temperatures below that first value, and can be poured at temperatures above that first value. If the effect of the additive is to reduce the pour point of the composition to a second value (for example 9°C, as in the last of the runs in Example 8), then this means that the additive-containing composition cannot be poured at temperatures below that second value, but can be poured at temperatures above that second value. Therefore, at temperatures between first and second values (i.e. between 9 and 30°C. in the particular example noted above), the presence of the additive makes the composition thinner, not thicker. There is no suggestion in Mueller that his additives can, under any circumstances, have an opposite effect, namely to make the paraffin-containing petroleum oils thicker.

7. Mueller does not disclose any cosmetic composition, and the paraffin-containing crude oils, vacuum gas oils and residual oils referred to by Mueller are not used in cosmetic compositions. In my opinion, therefore, nobody skilled in the art of cosmetic compositions would consider that Mueller's teaching is relevant to cosmetic compositions.

8. Morawsky is concerned with the use of certain SCC polymers to thicken oils, particularly for the manufacture of cosmetic compositions. Morawsky's SCC polymers must contain a carboxyl group ("hydrophilic functionality... provided by a constituent selected from the group consisting of C_3- C_6- α.β-ethylenically unsaturated carboxylic monoacid, C_3- C_6- α.β-ethylenically unsaturated carboxylic diacid, monoesters and monoamides of such carboxylic diacid"). Thus, Morawsky's carboxyl-containing SCC polymers are different from Mueller's carboxyl-free SCC polymers, and Morawsky's objective in using the carboxyl-containing SCC polymers is the opposite of Mueller's objective in using the carboxyl-free SCC polymers. Morawsky's carboxyl-containing SCC polymers are also different from the SCC polymers used in the present invention, which must be free from the carboxylic acid groups which are an essential part of Morawsky's additives.

9. Morawsky makes it clear that her objective is to produce a thickened oil composition. The following passages in Morawsky are representative.

The present invention relates to compositions in which the oil is thickened... (column 1, lines 5-6)

An object of the present invention is to provide a composition in which the oil is thickened... (Column 2, lines 5-6)

Another object of the present invention is to provide a composition, particularly in the form of... in which the oil is thickened... (Column 2, lines 11-14)

Still another object of the present invention is to provide a composition, particularly in the form of... in which the oil is thickened... (Column 2, lines 20-23)

These and other passages in Morawsky make it clear that if a particular amount of a particular additive in a particular oil-containing composition does not result in thickening of the oil, Morawsky's objective has not been achieved.

10. Morawsky also states

The composition may be thickened to the desired viscosity which is dependent on the functional properties of the composition (column 3, lines 31-32).

This passage states explicitly something which is well-known to those skilled in the art of thickening oil-containing compositions, namely that the extent of thickening which is desirable depends upon the intended use of the composition.

11. Column 3, lines 19-33, of Morawsky, discusses the amounts of additive to be used. Consistent with the passages quoted above, and similar passages elsewhere in Morawsky, column 3, lines 19-33, begins by stating

> *In the compositions, the amount of thickening copolymer, as defined above, is present in an amount sufficient to thicken the composition to the desired thickness.*

This statement is not limited to the use of a numerically specified amount of additive, nor does it state that the desired thickening will result if a numerically specified amount of additive is used. It simply says that the amount of the additive is such that the composition is thickened to the desired extent. The next sentence in Morawsky states

> *In general, it (*i.e. the thickening copolymer) *is present in an amount of from about 0.1% to about 12%, particularly from about 0.5 to about 10% by weight of the oil.*

In my opinion, one of ordinary skill in the art of cosmetic compositions, reading this sentence in the context of Morawsky, would understand

(a) that the range of 0.1-12% is a range within which effective concentrations are likely to be found; and

(b) that concentrations within the range of 0.1-12% will not necessarily be effective; and

(c) that, in some cases, effective concentrations will be outside the range of 0.1-12%.

12. In some of the claims of this application rejected under 35 USC 102 or 103, the definition of the SCC polymer additive is broad enough to include the mixture of carboxyl-free SCC polymer additives used by Mueller. However, those claims also require that the SCC polymer additive is used in amount such that "it thickens the oil". It seems to me clear that an amount that thickens the oil must be different from an amount that produces "a flow-improving effect" as required by Mueller, i.e. an amount that

produces an opposite result, namely to make the composition thinner, not thicker. However, I am informed that the Examiner, in rejecting the claims, is taking the position that

(a) the rejected claims require the (carboxyl-free) additive to be present in amount 0.1 to 12% because (in his opinion, contrary to mine, as expressed in paragraph 11 above) Morawsky is limited to the use of 0.1 to 12% of the (carboxyl-containing) additive; and

(b) because there is an overlap between the range of 0.1 to 12% disclosed by Morawsky and the range of 0.0001 to 1% disclosed by Mueller, the compositions claimed in the rejected claims are the same as the compositions disclosed in Mueller.

I do not understand the Examiner's position. However, the following comments may be relevant.

The largest amount of additive in any of Mueller's working Examples (none of which has a water phase) is 0.1%. The smallest amount used in any of Morawsky's working Examples without a water phase is 2.5%. The smallest amount used in any of the present application's working Examples without a water phase is 5%. The oils and the additives in the working Examples of these three specifications are different. Nevertheless, it is clear to me, and in my opinion it would be clear to others skilled in the art of thickening oil-containing compositions, that the amounts of additive likely to be used in practicing Mueller's invention are much smaller than the amounts likely to be used in practicing Morawsky's invention or in practicing the present invention. It seems likely, therefore, that at least some SCC polymers will both (i) make at least some oils thinner when used in low concentrations, and (ii) make at least some oils thicker when used in much greater concentrations. But there is no suggestion of this possibility in Mueller or Morawsky.

The undersigned, having been warned that willful false statements and the like are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001, and that such willful false statements may jeopardize the validity of the present application and any

patent granted thereon, declares that all statements made herein on his own knowledge are true and that all statements made on information and belief are believed to be true.

Dated March 3, 2004

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Steven P. Bitler

Steven P. Bitler